



LEARNING STYLES AND ANXIETY LEVELS ON MATHEMATICS ACHIEVEMENT OF JUNIOR HIGH SCHOOL STUDENTS

Jenie Ocbania Mayor¹, Phil S. Ocampo, Ph.D²

¹Master of Science in Mathematics Education, Isabela State University, Echague, Philippines

²Program Chair, Master of Science in Mathematics Education, Isabela State University - Echague, Philippines

ABSTRACT

This study examined the relationship between learning styles, mathematics anxiety, and Mathematics achievement among junior high school students in Jones West District during the School Year 2025–2026. It aimed to identify students' preferred learning styles, determine their levels of mathematics anxiety, assess their academic performance, and analyze the relationship among these variables as a basis for developing an intervention program.

A descriptive–correlational quantitative research design was employed. A total of 319 students were selected from a population of 1,850 using stratified random sampling. Data were collected through a structured questionnaire consisting of an adapted Perceptual Learning Style Preference Questionnaire (PLSPQ) and Mathematics Anxiety scales (MARS and AMAS). Statistical tools such as weighted mean, frequency and percentage distribution, and Pearson's correlation coefficient were used to analyze the data.

The findings revealed that students demonstrated strong preferences across multiple learning styles, particularly auditory, kinesthetic, and visual. Mathematics anxiety was experienced at varying levels, with test-taking and numerical task anxiety occurring more frequently compared to course-related and everyday numerical anxiety. In terms of academic performance, most students achieved satisfactory to excellent levels in Mathematics.

Correlation analysis indicated that learning styles did not have a statistically significant relationship with Mathematics achievement. In contrast, mathematics anxiety showed a significant negative relationship with achievement, suggesting that higher anxiety levels are associated with lower academic performance.

The results highlight that while learning preferences characterize how students engage with instruction, emotional factors such as anxiety play a more critical role in influencing academic outcomes. The study recommends the development of targeted intervention programs focused on reducing mathematics anxiety and fostering a supportive learning environment to enhance student performance in Mathematics.

KEYWORDS: Learning Styles, Mathematics Anxiety, Mathematics Achievement, Junior High School Students, Descriptive-Correlational Study, Intervention Program

INTRODUCTION

Mathematics has become ever more central to the demands of a technology-driven, data-rich society. For students, proficiency in Mathematics is not only foundational for STEM pathways but also essential for everyday problem-solving, critical thinking, and future workforce readiness. However, many learners struggle to achieve competence in Mathematics, even in settings with adequate resources and curricular support. As educational systems around the world continue to reevaluate their approaches to pedagogy, assessment, and student well-being, it is essential to explore the fundamental factors that influence and shape the process of learning Mathematics. Among the many variables affecting student outcomes, learning styles and Mathematics anxiety have attracted significant interest, as both may influence how learners engage with mathematical content and ultimately how they perform.

The Philippines continues to struggle with low Mathematics achievement among students. Results from international

assessments such as the Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) revealed persistent gaps in Filipino students' performance. In the 2022 PISA results, the Philippines ranked among the lowest in Mathematics proficiency, with only 16% of students reaching the minimum level of competency (OECD, 2023). Similarly, the 2019 TIMSS assessment placed the Philippines near the bottom, indicating a need for systemic improvement in mathematical instruction and learning strategies (Mullis et al., 2020). These international assessment results clearly show that many Filipino learners continue to face difficulties in mathematical understanding, reasoning, and application, thereby calling for stronger and more responsive educational interventions.

Furthermore, national assessments reinforce the persistent issue of low mathematical proficiency among Filipino learners. The National Career Assessment Examination (NCAE) has consistently revealed that students struggle with essential



mathematical reasoning and problem-solving skills, performing below the expected national standards (Department of Education, 2023). This indicates that many learners face difficulties not only in computation but also in applying mathematical concepts to real-life situations. Such findings reflect broader concerns about the effectiveness of current instructional strategies and the depth of students' conceptual understanding, which are critical for success in higher education and future careers. The continued underperformance in national assessments thus emphasizes the urgency of addressing gaps in the teaching and learning of Mathematics.

In response to these challenges, the Department of Education (2024) has initiated key reforms through the MATATAG Curriculum. This new curriculum aims to strengthen the foundation of learners' mathematical skills by promoting learner-centered instruction, contextualized learning experiences, and differentiated teaching approaches that respond to students' diverse abilities and needs. By focusing on mastery of essential competencies and promoting a more supportive learning environment, the MATATAG Curriculum seeks to cultivate students' confidence and interest in Mathematics. These educational reforms signify a paradigm shift toward evidence-based instruction, one that values understanding learners' cognitive and emotional profiles as a basis for designing interventions that effectively improve mathematical reasoning and overall academic achievement.

This study is also aligned with Sustainable Development Goal 4 (Quality Education), which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. More specifically, it supports Target 4.1, which calls for relevant and effective learning outcomes in primary and secondary education, and Indicator 4.1.1, which focuses on the proportion of learners achieving at least minimum proficiency in Mathematics. It may also support Target 4.a, which promotes safe, inclusive, and effective learning environments. By examining students' learning preferences and anxiety levels and by developing an intervention program grounded in evidence, this study responds to both national educational reforms and global calls for improving the quality of education, strengthening learner achievement, and creating supportive classroom environments that help students succeed in Mathematics.

Within this evolving curriculum landscape, understanding learning styles has become increasingly relevant. Learning styles describe the preferred ways individuals process and retain information. The VARK model, developed by Fleming and Mills (1992), identifies four primary learning preferences such as Visual, Auditory, Read/Write, and Kinesthetic. Recent studies affirmed that these preferences significantly affect how students comprehend and perform in Mathematics (Alemu et al., 2022). For instance, students with visual learning tendencies may grasp mathematical relationships more effectively through diagrams

and models, while kinesthetic learners may benefit from manipulatives or experiential activities (Almighal et al., 2021). Moreover, recognizing diverse learning styles aligns with the MATATAG curriculum's learner-centered philosophy, promoting inclusivity and active engagement in Mathematics classrooms.

Despite growing research on learning styles and Mathematics anxiety, there remains a research gap. Most local studies focus either on learning styles alone or on anxiety as an isolated factor, rarely integrating both to predict Mathematics achievement (Dela Cruz et al., 2022). Additionally, the majority of existing literature centers on college students or STEM-focused learners, leaving limited evidence on junior high school students who are still developing foundational mathematical competencies, study habits, and academic confidence (Ramos & Villanueva, 2023). This suggests that the existing body of literature does not yet provide sufficient understanding of how learning styles and Mathematics anxiety simultaneously influence the Mathematics achievement of junior high school students in the local context. Moreover, only a few studies have extended their findings toward the development of a school-based intervention program that may directly address learners' cognitive preferences and emotional barriers in Mathematics. Because of this, there remains a need for a study that not only examines these variables together but also uses the results as a basis for a context-specific intervention program for junior high school students.

Given these realities, this study aims to fill this gap by investigating learning styles and anxiety levels as factors influencing Mathematics achievement among junior high school students, with the findings serving as the basis for the development of an intervention program. The goal is to identify which learning preferences are most dominant, assess the students' levels of math anxiety, and determine how these factors relate to their academic performance. Through quantitative analysis and correlation methods, the study intends to establish significant differences and relationships among these variables to inform instructional practices.

As Mathematics achievement continues to be a priority concern in Philippine basic education, there is a strong need to generate evidence-based interventions that are responsive to the actual experiences of learners. Since the researcher's role is a Mathematics teacher in a public school, she is deeply committed to enhancing students' learning experiences. Recognizing the diverse learning needs and emotional challenges faced by junior high school students, she seeks to design a mathematics anxiety reduction and learning enhancement program grounded in empirical findings. Such a program aspires to help learners not only overcome anxiety but also develop a more positive and confident attitude toward Mathematics. By doing so, this study contributes to the broader goal of improving Mathematics education in the Philippines and aligns with the MATATAG



curriculum's vision of nurturing competent, confident, and compassionate learners.

Objectives of the Study

Generally, the study attempted to appraise the learning styles and anxiety levels on Mathematics achievement of Junior High School students as a basis for an Intervention Program.

Specifically, it sought to answer the following questions:

1. What are the preferred learning styles of junior high school students in terms of:
 - 1.1. Visual learning;
 - 1.2. Auditory learning;
 - 1.3. Tactile;
 - 1.4. Kinesthetic learning;
 - 1.5. Group; and
 - 1.6. Individual?
2. What is the level of Mathematics anxiety of junior high school students in terms of:
 - 2.1. Test-taking anxiety;
 - 2.2. Numerical task anxiety;
 - 2.3. Course-related anxiety; and
 - 2.4. Everyday numerical anxiety?
3. What is the level of Mathematics achievement of junior high school students based on their current grade in Mathematics for the school year 2025 - 2026?
4. What significant relationship exists between the learning styles and anxiety levels of junior high school students and their Mathematics achievement?

METHODOLOGY

This study employed a descriptive–correlational quantitative research design to examine the learning styles and mathematics anxiety levels and their relationship to Mathematics achievement among junior high school students in Jones West District for the School Year 2025–2026. The descriptive approach was used to identify students' preferred learning styles, levels of mathematics anxiety, and academic performance, while the correlational approach determined the relationship among these variables (Creswell & Creswell, 2018).

Sampling Design

The respondents of the study were junior high school students enrolled in Jones West District during the School Year 2025–2026. Using stratified random sampling, a total of 319 students were selected from a population of 1,850 learners, with the sample size determined using the Raosoft calculator at a 95% confidence level and 5% margin of error.

Each school served as a stratum, and respondents were proportionally distributed to ensure balanced representation. Simple random sampling was then applied within each group to provide equal chances of participation and reduce bias.

Research Instrument

Data were collected using a structured questionnaire consisting of two main parts:

- a) Learning Styles Questionnaire – adapted from the Perceptual Learning Style Preference Questionnaire (PLSPQ) by Reid (1984), which measures six learning styles: visual, auditory, tactile, kinesthetic, group, and individual. The instrument uses a Likert scale and classifies learning preferences into major, minor, and negligible categories.
- b) Mathematics Anxiety Questionnaire – adapted from the Mathematics Anxiety Rating Scale (MARS) and the Abbreviated Math Anxiety Scale (AMAS). It measures four dimensions of anxiety: test-taking anxiety, numerical task anxiety, course-related anxiety, and everyday numerical anxiety.

The instrument underwent pilot testing and showed high reliability, with Cronbach's alpha values ranging from 0.87 to 0.90, indicating strong internal consistency.

Statistical Design

Several statistical tools were used to analyze the data:

1. Weighted mean was used to determine the preferred learning styles and levels of mathematics anxiety among students.
2. Frequency and percentage distribution were used to describe the respondents' data and academic performance.
3. Students' Mathematics achievement was interpreted using the DepEd grading scale (Outstanding to Did Not Meet Expectations) based on DepEd Order No. 8, s. 2015.
4. Pearson's correlation coefficient (r) was used to determine the significant relationship between learning styles, mathematics anxiety, and Mathematics achievement.

These statistical methods enabled the researcher to describe students' learning characteristics and examine how these relate to their academic performance in Mathematics.

RESULTS AND DISCUSSIONS

The Learning Styles of Junior High School Students

Table 1. Preferred Learning styles of Junior High School students in terms of Visual learning.

Category	Frequency	Percentage
Negligible	3	.9
Minor	106	33.2
Major	210	65.8
Total	319	100.0

The data show that a large majority of the respondents (65.8%) fall under the major category in visual learning, while 33.2% are in the minor category and only 0.9% are negligible. This means that most junior high school students prefer learning through visual materials such as diagrams, charts, and written representations. It reflects that students are more comfortable when mathematical concepts are presented in ways they can see and organize visually, especially since Mathematics often involves abstract ideas that become easier to understand when



translated into images or structured formats. This pattern shows that visual learning is not just present but strongly dominant among the learners in this group.

This finding aligns with the study of Cebu Technological University (2021) and Cercado (2023), which found that visual strategies such as diagrams, charts, and visual aids improve students' understanding and performance in Mathematics. Similarly, Emban (2024) emphasized that visual learners demonstrate better comprehension and engagement when lessons are presented through visual representations. It implies that integrating visual approaches in teaching Mathematics can make learning more meaningful and accessible for students. When teachers consistently use diagrams, illustrations, and structured visual guides, students are more likely to grasp complex concepts, stay engaged in class, and develop stronger problem-solving skills, which can positively influence their academic performance.

Table 2. Preferred Learning styles of Junior High School students in terms of Tactile

Category	Frequency	Percentage
Negligible	3	.9
Minor	111	34.8
Major	205	64.3
Total	319	100.0

The data show that a majority of the respondents (64.3%) fall under the major category in tactile learning, while 34.8% are classified as minor and only 0.9% as negligible. This means that most junior high school students prefer learning through hands-on activities such as building models, writing notes, and engaging in practical tasks. It reflects that students understand mathematical concepts better when they are actively involved in the learning process rather than just listening or observing. This pattern shows that tactile learning is also a dominant preference, indicating that students benefit from experiences where they can physically interact with the lesson.

This finding is supported by Dela Cruz (2023) and Navarro et al. (2021), who found that students who engage in hands-on and activity-based learning demonstrate better understanding and retention in Mathematics. These studies highlight that tactile learners grasp concepts more effectively when they are involved in practical tasks and real-life applications. It implies that incorporating activities such as problem-solving tasks, written exercises, and manipulative-based learning can strengthen students' comprehension. When learners are given opportunities to actively participate, they are more likely to stay engaged, reduce confusion, and build deeper understanding, which can lead to improved performance in Mathematics.

Table 3. Preferred Learning styles of Junior High School students in terms of Auditory

Category	Frequency	Percentage
Negligible	1	.3
Minor	76	23.8
Major	242	75.9
Total	319	100.0

The data show that a large majority of the respondents (75.9%) fall under the major category in auditory learning, while 23.8% are in the minor category and only 0.3% are negligible. This means that most junior high school students prefer learning by listening, such as through discussions, verbal explanations, and teacher-led instruction. It reflects that students are more responsive when lessons are explained clearly and when they are given opportunities to hear and process information through spoken communication. This pattern shows that auditory learning is highly dominant, indicating that many students rely on listening as a key way to understand mathematical concepts.

This finding is supported by Cercado (2023) and Emban (2024), who found that students who are exposed to clear verbal explanations and interactive discussions tend to develop better understanding and engagement in Mathematics. These studies show that auditory learners benefit when teachers explain concepts step-by-step and encourage participation through recitation and dialogue. It implies that effective teaching in Mathematics should include strong verbal instruction, guided discussions, and opportunities for students to express their understanding orally. When students are able to listen, ask questions, and participate in discussions, they are more likely to clarify misunderstandings and build confidence in solving mathematical problems.

Table 4. Preferred Learning styles of Junior High School students in terms of Kinesthetic

Category	Frequency	Percentage
Negligible	3	.9
Minor	74	23.2
Major	242	75.9
Total	319	100.0

The data show that a large majority of the respondents (75.9%) fall under the major category in kinesthetic learning, while 23.2% are in the minor category and only 0.9% are negligible. This means that most junior high school students prefer learning through movement, physical activity, and direct involvement in tasks. It reflects that students understand mathematical concepts better when they are actively engaged, such as through hands-on activities, demonstrations, or real-life applications. This pattern shows that kinesthetic learning is highly dominant, indicating that students benefit when they are not just passive listeners but active participants in the learning process.

This finding is supported by Dela Cruz (2023) and Emban (2024), who emphasized that students who engage in physical and activity-based learning tend to have better understanding and retention of mathematical concepts. These studies show that kinesthetic learners perform better when lessons involve movement, interaction, and practical application. It implies that incorporating activities such as experiments, role-playing, and interactive problem-solving tasks can enhance students' learning experiences. When students are given the chance to move, explore, and apply concepts in real situations, they become more



engaged, develop deeper understanding, and gain confidence in learning Mathematics.

Table 5. Preferred Learning styles of Junior High School students in terms of Group

Category	Frequency	Percentage
Negligible	20	6.3
Minor	119	37.3
Major	180	56.4
Total	319	100.0

The data show that more than half of the respondents (56.4%) fall under the major category in group learning, while 37.3% are in the minor category and 6.3% are negligible. This means that a large portion of junior high school students prefer learning through collaboration with others, such as working in groups, sharing ideas, and participating in cooperative activities. It reflects that students are more comfortable and engaged when they are able to interact with peers, discuss solutions, and learn collectively rather than working alone. This pattern shows that group learning is a common preference, although not as dominant as other styles like auditory or kinesthetic.

This finding is supported by Cercado (2023) and Navarro et al. (2021), who found that collaborative learning helps students improve understanding and engagement in Mathematics through interaction and shared problem-solving. These studies show that students benefit from exchanging ideas and receiving feedback from peers, which can clarify difficult concepts. It implies that incorporating group activities, such as cooperative problem-solving and peer discussions, can enhance learning experiences in Mathematics. When students work together, they are more likely to develop communication skills, build confidence, and deepen their understanding of mathematical concepts through shared learning experiences.

Table 6. Preferred Learning styles of Junior High School students in terms of Individual

Category	Frequency	Percentage
Negligible	14	4.4
Minor	90	28.2
Major	215	67.4
Total	319	100.0

The data show that a majority of the respondents (67.4%) fall under the major category in individual learning, while 28.2% are in the minor category and 4.4% are negligible. This means that many junior high school students prefer learning on their own, working independently, and processing information at their own pace. It reflects that students are comfortable focusing individually, especially when solving mathematical problems that require concentration and personal understanding. This pattern shows that individual learning is also a dominant preference which indicates that students value having time and space to think and work through concepts on their own.

This finding is supported by Emban (2024) and Cebu Technological University (2021), which highlight that

independent learning allows students to develop deeper understanding and self-reliance in mastering mathematical concepts. These studies emphasize that learners who are given opportunities to work individually can better organize their thoughts and build confidence in their abilities. It implies that providing tasks that allow independent practice, such as seatwork, problem-solving exercises, and self-paced activities, can strengthen students' comprehension. When students are able to work independently, they can reflect more deeply, identify their own difficulties, and gradually improve their performance in Mathematics.

Extent of Mathematics Anxiety of Junior High School Students

Table 7. The mathematics Anxiety of Junior High School Students

Statement Indicators	Mean	Description
TEST-TAKING ANXIETY		
1. I feel nervous before taking a Mathematics test.	2.80	Often
2. During a math test, I find it hard to concentrate.	2.73	Often
3. I feel my heart racing when I see math test questions.	2.43	Rarely
4. I worry that I might fail every time I take a math exam.	3.03	Often
5. Even when I study, I still panic during math tests.	2.66	Often
NUMERICAL TASK ANXIETY		
6. I feel tense when solving math problems involving multiple steps.	2.80	Often
7. I get nervous when performing mental calculations.	2.76	Often
8. I feel uncomfortable when using numbers in real-life situations.	2.68	Often
9. I find it stressful to work with fractions, percentages, or ratios.	2.35	Rarely
10. I feel anxious when asked to estimate or calculate without a calculator.	2.53	Often
COURSE-RELATED ANXIETY		
11. I feel anxious whenever my math teacher explains a new topic.	2.62	Often
12. I get worried when I see the Mathematics syllabus or textbook.	2.18	Rarely
13. I feel stressed when attending math classes.	2.40	Rarely
14. I often think that Mathematics is too difficult for me to learn.	2.16	Rarely
15. I feel uneasy about the amount of math work I need to do.	2.42	Rarely
EVERYDAY NUMERICAL ANXIETY		
16. I feel nervous when asked to calculate expenses while shopping.	2.48	Rarely
17. I avoid tasks that require interpreting graphs or charts.	2.32	Rarely
18. I feel anxious when checking if I have received the correct change.	2.06	Rarely
19. I feel tense when comparing prices or discounts in stores.	2.34	Rarely
20. I find it stressful to understand data or numbers in news articles.	2.21	Rarely
	2.42	Rarely

The data show that students experience test-taking anxiety at a level of "often" (2.80). Many students feel nervous before taking a Mathematics test (2.73) and even experience physical reactions such as a racing heart when they see test questions (3.03). They also worry about failing (2.66) and feel panic during exams even when they have studied (2.80). However, difficulty in concentrating during tests is rated as "rarely" (2.43), which means that while students feel anxious, they are still somewhat able to focus. This means that the pressure of examinations creates emotional tension among students, even if it does not always fully disrupt their concentration.

It implies that tests are a major source of stress for students. The presence of fear, worry and physical reactions shows that students associate Mathematics with performance pressure. Even when they prepare, anxiety still affects their confidence, which may influence how well they perform during exams.



Students experience numerical task anxiety at a level of “often.” They feel tense when solving multi-step problems (2.76) and get nervous when performing mental calculations (2.68). They also find working with fractions, percentages, or ratios stressful (2.53) and feel anxious when asked to calculate without a calculator (2.62). However, discomfort when using numbers in real-life situations is rated as “rarely” (2.35). This means that anxiety is more evident when tasks are complex or require accuracy and speed.

It implies that students become uneasy when they are faced with challenging mathematical processes. Tasks that require multiple steps or mental effort can create pressure, which affects their confidence. At the same time, their lower anxiety in real-life situations shows that they are more comfortable when Mathematics feels practical and less demanding.

The data show that course-related anxiety is experienced at a level of “rarely.” Students rarely feel anxious when the teacher explains a new topic (2.18), when they see the syllabus or textbook (2.40), or when attending math classes (2.16). They also rarely think that Mathematics is too difficult (2.42) or feel uneasy about the amount of work (2.48). This means that students are generally comfortable during regular classroom learning.

It implies that the classroom environment is not the main source of anxiety. Students are able to follow lessons and engage in discussions without strong negative feelings. This also means that anxiety tends to arise more during performance-based situations rather than during instruction.

Students experience everyday numerical anxiety at a level of “rarely.” They rarely feel nervous when calculating expenses (2.32), interpreting graphs (2.06), checking change (2.34), comparing prices (2.21), or understanding numerical data in news (2.42). This means that students are generally at ease when using numbers in daily life.

It implies that students do not strongly associate Mathematics with everyday stress. They are able to apply basic numerical skills in real-life situations without much fear. This shows that anxiety is more linked to academic pressure rather than to the actual use of numbers in daily activities.

The Academic Performance of Students

Table 8. Distribution of the Student-Respondents According to their Academic Performance in Mathematics.

Grade Range	Frequency	Percent
90 - 100 (Excellent)	150	47.0
85 - 89 (Very Satisfactory)	83	26.0
80 - 84 (Satisfactory)	53	16.6
75 - 79 (Fairly Satisfactory)	33	10.3
Total	319	100.0

The data show that nearly half of the respondents, 150 students or 47.0%, fall under the excellent category (90–100), followed by 26.0% in the very satisfactory range and 16.6% in the satisfactory level. Only 10.3% of the students are in the fairly satisfactory category. This means that most of the junior high school students are performing well in Mathematics, with a large portion achieving high grades. The distribution reflects that strong academic performance is common among the respondents, and only a small group falls in the lower performance range.

It implies that despite the presence of mathematics anxiety observed earlier, many students are still able to maintain good academic standing. This may indicate that students are coping with the subject demands even when they experience pressure during tests or problem-solving tasks. It also means that performance in Mathematics is not solely determined by anxiety, but may also be influenced by factors such as study habits, teaching strategies, and learning preferences. The presence of high-performing students suggests that with the right support and learning environment, students can manage challenges in Mathematics and achieve positive outcomes.

Relationship between the Learning Styles and Anxiety Levels of Junior High School Students and their Mathematics Achievement.

Table 9: Correlation Between Learning Styles, Mathematics Anxiety, and Mathematics Achievement

Variables	r-value (GWA)	Sig. (2-tailed)
Visual	0.061 ^{ns}	0.276
Tactile	-0.077 ^{ns}	0.168
Auditory	0.060 ^{ns}	0.283
Kinesthetic	0.012 ^{ns}	0.831
Group	-0.033 ^{ns}	0.559
Individual	0.104 ^{ns}	0.063
Anxiety Mean	-0.326**	0.000

Legend: * = Significant, ns = Not significant

Table 16 shows that none of the learning style variables has a significant relationship with Mathematics achievement, since all their p-values are greater than 0.05. Visual learning has $r = 0.061$, $p = 0.276$, tactile has $r = -0.077$, $p = 0.168$, auditory has $r = 0.060$, $p = 0.283$, kinesthetic has $r = 0.012$, $p = 0.831$, group has $r = -0.033$, $p = 0.559$, and individual has $r = 0.104$, $p = 0.063$. These results lead to the acceptance of the null hypothesis for all six learning styles. This means that although students clearly show preferred ways of learning, those preferences do not appear to translate directly into higher or lower Mathematics achievement in this group. In practical terms, being more visual, auditory, kinesthetic, group-oriented, or individual-oriented did not by itself make a student more likely to obtain a higher grade in Mathematics. This does not mean learning styles are unimportant. It means that in this study, they do not have a statistically meaningful direct relationship with achievement. This interpretation aligns to the literature review which notes that the connection between learning styles and achievement is not always straightforward and that other factors such as motivation, prior knowledge, and anxiety may exert stronger influence on



performance (Wan Hussin & Mohd Matore, 2023; Ocampo et al., 2023; Dewi Hariri et al., 2024).

A different picture appears in Mathematics anxiety which shows a significant negative relationship with Mathematics achievement at $r = -0.326$, $p = 0.000$. This result leads to the rejection of the null hypothesis for anxiety. The negative value means that as mathematics anxiety increases, Mathematics achievement tends to decrease. The relationship is not merely present but meaningful enough to show that anxiety is moving in the opposite direction of performance. Students who carry more fear, tension, and worry toward Mathematics are more likely to obtain lower grades, while those with lower anxiety tend to perform better. Among all the variables tested, anxiety is the only one that shows a significant connection with achievement, which makes it the more powerful factor in explaining students' performance in this study. This supports the discussion in the literature review that mathematics anxiety can interfere with working memory, reduce concentration, weaken confidence, and eventually lower achievement, even when students may have learning preferences that match classroom instruction (Namkung et al., 2021; Finell et al., 2022). The literature also states that when learning styles and anxiety are examined together, anxiety often emerges as the stronger predictor of Mathematics achievement, while learning-style alignment accounts for only a modest portion of variance (Ocampo et al., 2023).

The table reveals an important reality about junior high school learners. Students may know how they prefer to learn and teachers may try to respond to those preferences, but preference alone is not enough to guarantee strong performance. Emotional condition matters more when it comes to actual achievement. A student may prefer visual materials or hands-on activities, yet still struggle in Mathematics if fear of failure, tension during problem solving, or panic during assessment is left unresolved. This explains why anxiety stands out in the results while the learning styles do not. It implies that improving Mathematics achievement requires more than matching instruction to learning preferences. It also requires creating a classroom climate where students feel safe to think, make mistakes, ask questions, and work through difficult tasks without being overwhelmed by pressure. This is consistent with the study's direction which emphasizes not only awareness of learning styles but also the need to identify and address students' anxiety in order to build confidence and improve outcomes in Mathematics.

CONCLUSION

The following are the conclusions for the study that are based on the previously presented findings and their implications.

1. Junior high school students demonstrate strong preferences across all identified learning styles, with auditory and kinesthetic emerging as the most dominant, followed by individual, visual, tactile, and group learning. This indicates that learners utilize multiple approaches in understanding Mathematics rather than relying on a single learning style.

2. The level of Mathematics anxiety among students is more evident in test-taking and numerical task situations, which are experienced at the level of "often," while course-related and everyday numerical anxiety are experienced at the level of "rarely." This means that anxiety is more pronounced during performance and complex problem-solving tasks rather than during regular classroom instruction or daily numerical activities.
3. The level of Mathematics achievement of junior high school students is generally high, with most learners falling under the Excellent and Very Satisfactory categories, indicating that despite experiencing anxiety, students are still able to maintain good academic performance in Mathematics.
4. There is no significant relationship between the different learning styles and Mathematics achievement. However, a significant negative relationship exists between Mathematics anxiety and achievement, indicating that as anxiety increases, students' performance in Mathematics tends to decrease. This suggests that emotional factors, particularly anxiety, have a greater influence on academic performance than learning style preferences.

RECOMMENDATION

Based on the findings and conclusions of the study, the following recommendations are proposed:

1. Mathematics teachers are encouraged to use multimodal teaching strategies that incorporate visual, auditory, kinesthetic, tactile, group, and individual activities to address students' varied learning preferences and enhance engagement in Mathematics lessons.
2. Teachers should implement anxiety-reduction strategies, particularly during tests and complex problem-solving tasks, such as providing guided practice, giving clear instructions, using low-stakes assessments, and creating a supportive classroom environment that reduces fear and pressure.
3. Schools and administrators are encouraged to develop and implement structured intervention programs focused on reducing Mathematics anxiety, especially in test-taking and numerical tasks, through counseling support, confidence-building activities, and stress management techniques.
4. Teachers should provide additional support in complex mathematical tasks, such as multi-step problem solving, mental calculations, and estimation, through scaffolding, step-by-step demonstrations, and regular practice to help students build confidence and reduce anxiety.
5. Students are encouraged to develop positive study habits and self-regulation strategies, such as regular practice, seeking help when needed, and maintaining a positive mindset toward Mathematics to manage anxiety and improve performance.
6. Parents or guardians are encouraged to provide a supportive home environment by motivating students, reducing pressure related to performance, and encouraging practice in Mathematics to help lessen anxiety and build confidence.



7. Future researchers are encouraged to explore other factors influencing Mathematics achievement, such as motivation, teaching strategies, and self-efficacy, to further understand the variables affecting students' performance beyond learning styles and anxiety.

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AUTHOR'S BIONOTE



JENIE OCBANIA MAYOR was born on September 6, 1999, and is the second child of Sailyn Ocbania Mayor and Gerry Acosta Mayor. She resides at Purok 5, Malannit, Jones, Isabela.

She completed her elementary education at Malannit Elementary School, where she graduated as First Honorable Mention. She pursued her secondary education at Jones Rural School – Malannit Annex and also graduated as First

Honorable Mention, demonstrating consistent academic excellence.



She earned her degree of Bachelor of Secondary Education major in Mathematics at Isabela State University – Echague, where she developed her passion for teaching and strong foundation in Mathematics education.

At present, she is a Teacher I at Addalam Region High School, where she has been teaching Mathematics for one year and two months. As an educator, she is committed to enhancing students' learning experiences and helping them build confidence and competence in Mathematics.